

SEQUENCE LISTING

<110> Jegla, Timothy James
ICAgen, Inc.

<120> Human HAC3

<130> 018512-002210US

<140> US 09/548,933

<141> 2000-04-13

<150> US 60/129,456

<151> 1999-04-15

<160> 16

<170> PatentIn Ver. 2.1

<210> 1

<211> 774

<212> PRT

<213> Homo sapiens

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<223> human hyperpolarization-activated voltage-gated
cation channel 3 (HAC3)

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Pro Gly Leu Glu Ala Val Pro Pro Val Ala Pro Pro Pro Ala Thr Ala
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Ala Ser Gly Pro Ile Pro Lys Ser Gly Pro Glu Pro Lys Arg Arg His
35 40 45

Leu Gly Thr Leu Leu Gln Pro Thr Val Asn Lys Phe Ser Leu Arg Val
50 55 60

Phe Gly Ser His Lys Ala Val Glu Ile Glu Gln Glu Arg Val Lys Ser
65 70 75 80

Ala Gly Ala Trp Ile Ile His Pro Tyr Ser Asp Phe Arg Phe Tyr Trp
85 90 95

Asp Leu Ile Met Leu Leu Leu Met Val Gly Asn Leu Ile Val Leu Pro
100 105 110

Val Gly Ile Thr Phe Phe Lys Glu Glu Asn Ser Pro Pro Trp Ile Val
115 120 125

Phe Asn Val Leu Ser Asp Thr Phe Phe Leu Leu Asp Leu Val Leu Asn
130 135 140

Phe Arg Thr Gly Ile Val Val Glu Glu Gly Ala Glu Ile Leu Leu Ala
145 150 155 160

Pro Arg Ala Ile Arg Thr Arg Tyr Leu Arg Thr Trp Phe Leu Val Asp
165 170 175

002210-018512

Leu Ile Ser Ser Ile Pro Val Asp Tyr Ile Phe Leu Val Val Glu Leu
 180 185 190
 Glu Pro Arg Leu Asp Ala Glu Val Tyr Lys Thr Ala Arg Ala Leu Arg
 195 200 205
 Ile Val Arg Phe Thr Lys Ile Leu Ser Leu Leu Arg Leu Leu Arg Leu
 210 215 220
 Ser Arg Leu Ile Arg Tyr Ile His Gln Trp Glu Glu Ile Phe His Met
 225 230 235 240
 Thr Tyr Asp Leu Ala Ser Ala Val Val Arg Ile Phe Asn Leu Ile Gly
 245 250 255
 Met Met Leu Leu Leu Cys His Trp Asp Gly Cys Leu Gln Phe Leu Val
 260 265 270
 Pro Met Leu Gln Asp Phe Pro Pro Asp Cys Trp Val Ser Ile Asn His
 275 280 285
 Met Val Asn His Ser Trp Gly Arg Gln Tyr Ser His Ala Leu Phe Lys
 290 295 300
 Ala Met Ser His Met Leu Cys Ile Gly Tyr Gly Gln Gln Ala Pro Val
 305 310 315 320
 Gly Met Pro Asp Val Trp Leu Thr Met Leu Ser Met Ile Val Gly Ala
 325 330 335
 Thr Cys Tyr Ala Met Phe Ile Gly His Ala Thr Ala Leu Ile Gln Ser
 340 345 350
 Leu Asp Ser Ser Arg Arg Gln Tyr Gln Glu Lys Tyr Lys Gln Val Glu
 355 360 365
 Gln Tyr Met Ser Phe His Lys Leu Pro Ala Asp Thr Arg Gln Arg Ile
 370 375 380
 His Glu Tyr Tyr Glu His Arg Tyr Gln Gly Lys Met Phe Asp Glu Glu
 385 390 395 400
 Ser Ile Leu Gly Glu Leu Ser Glu Pro Leu Arg Glu Glu Ile Ile Asn
 405 410 415
 Phe Thr Cys Arg Gly Leu Val Ala His Met Pro Leu Phe Ala His Ala
 420 425 430
 Asp Pro Ser Phe Val Thr Ala Val Leu Thr Lys Leu Arg Phe Glu Val
 435 440 445
 Phe Gln Pro Gly Asp Leu Val Val Arg Glu Gly Ser Val Gly Arg Lys
 450 455 460
 Met Tyr Phe Ile Gln His Gly Leu Leu Ser Val Leu Ala Arg Gly Ala
 465 470 475 480
 Arg Asp Thr Arg Leu Thr Asp Gly Ser Tyr Phe Gly Glu Ile Cys Leu
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00767597 0424

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 primer

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00767597 012201

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 115 120 125
 Glu Ala Gly Ser Glu Glu Ala Gly Pro Ala Gly Glu Pro Arg Gly Ser
 130 135 140
 Gln Ala Ser Phe Met Gln Arg Gln Phe Gly Ala Leu Leu Gln Pro Gly
 145 150 155 160
 Val Asn Lys Phe Ser Leu Arg Met Phe Gly Ser Gln Lys Ala Val Glu
 165 170 175
 Arg Glu Gln Glu Arg Val Lys Ser Ala Gly Ala Trp Ile Ile His Pro
 180 185 190
 Tyr Ser Asp Phe Arg Phe Tyr Trp Asp Phe Thr Met Leu Leu Phe Met
 195 200 205
 Val Gly Asn Leu Ile Ile Ile Pro Val Gly Ile Thr Phe Phe Lys Asp
 210 215 220
 Glu Thr Thr Ala Pro Trp Ile Val Phe Asn Val Val Ser Asp Thr Phe
 225 230 235 240
 Phe Leu Met Asp Leu Val Leu Asn Phe Arg Thr Gly Ile Val Ile Glu
 245 250 255
 Asp Asn Thr Glu Ile Ile Leu Asp Pro Glu Lys Ile Lys Lys Lys Tyr
 260 265 270
 Leu Arg Thr Trp Phe Val Val Asp Phe Val Ser Ser Ile Pro Val Asp
 275 280 285
 Tyr Ile Phe Leu Ile Val Glu Lys Gly Ile Asp Ser Glu Val Tyr Lys
 290 295 300
 Thr Ala Arg Ala Leu Arg Ile Val Arg Phe Thr Lys Ile Leu Ser Leu
 305 310 315 320
 Leu Arg Leu Leu Arg Leu Ser Arg Leu Ile Arg Tyr Ile His Gln Trp
 325 330 335
 Glu Glu Ile Phe His Met Thr Tyr Asp Leu Ala Ser Ala Val Met Arg
 340 345 350
 Ile Cys Asn Leu Ile Ser Met Met Leu Leu Leu Cys His Trp Asp Phe
 355 360 365
 Cys Leu Gln Phe Leu Val Pro Met Leu Gln Asp Phe Pro Arg Asn Cys
 370 375 380
 Trp Val Ser Ile Asn Gly Met Val Asn His Ser Trp Ser Glu Leu Tyr
 385 390 395 400
 Ser Phe Ala Leu Phe Lys Ala Met Ser His Met Leu Cys Ile Gly Tyr
 405 410 415

00062503 042204

Gly Arg Gln Ala Pro Glu Ser Met Thr Asp Ile Trp Leu Thr Met Leu
 420 425 430
 Ser Met Ile Val Gly Ala Thr Cys Tyr Ala Met Phe Ile Gly His Ala
 435 440 445
 Thr Ala Leu Ile Gln Ser Leu Asp Ser Ser Arg Arg Gln Tyr Gln Glu
 450 455 460
 Lys Tyr Lys Gln Val Glu Gln Tyr Met Ser Phe His Lys Leu Pro Ala
 465 470 475 480
 Asp Phe Arg Gln Lys Ile His Asp Tyr Tyr Glu His Arg Tyr Gln Gly
 485 490 495
 Lys Met Phe Asp Glu Asp Ser Ile Leu Gly Glu Leu Asn Gly Pro Leu
 500 505 510
 Arg Glu Glu Ile Val Asn Phe Asn Cys Arg Lys Leu Val Ala Ser Met
 515 520 525
 Pro Leu Phe Ala Asn Ala Asp Pro Asn Phe Val Thr Ala Met Leu Thr
 530 535 540
 Lys Leu Lys Phe Glu Val Phe Gln Pro Gly Asp Tyr Ile Ile Arg Glu
 545 550 555 560
 Gly Thr Ile Gly Lys Lys Met Tyr Phe Ile Glx His Gly Val Val Ser
 565 570 575
 Val Leu Thr Lys Gly Asn Lys Glu Met Lys Leu Ser Asp Gly Ser Tyr
 580 585 590
 Phe Gly Glu Ile Cys Leu Leu Thr Arg Gly Arg Arg Thr Ala Ser Val
 595 600 605
 Arg Ala Asp Thr Tyr Cys Arg Leu Tyr Ser Leu Ser Val Asp Asn Phe
 610 615 620
 Asn Glu Val Leu Glu Glu Tyr Pro Met Met Arg Arg Ala Phe Glu Thr
 625 630 635 640
 Val Ala Ile Asp Arg Leu Asp Arg Ile Gly Lys Lys Asn Ser Ile Leu
 645 650 655
 Leu His Lys Val Gln His Asp Leu Asn Ser Gly Val Phe Asn Asn Gln
 660 665 670
 Glu Asn Ala Ile Ile Gln Glu Ile Val Lys Tyr Asp Arg Glu Met Val
 675 680 685
 Gln Gln Ala Glu Leu Gly Gln Arg Val Gly Leu Phe Pro Pro Pro Pro
 690 695 700
 Pro Pro Pro Gln Val Thr Ser Ala Ile Ala Thr Leu Gln Gln Ala Ala
 705 710 715 720
 Ala Met Ser Phe Cys Pro Gln Val Ala Arg Pro Leu Val Gly Pro Leu
 725 730 735

0066597-0420
 0066597-0420

Tyr Ile Phe Leu Ile Val Glu Lys Gly Met Asp Ser Glu Val Tyr Lys
115 120 125

Thr	Ala	Arg	Ala	Leu	Arg	Ile	Val	Arg	Phe	Thr	Lys	Ile	Leu	Ser	Leu	
	130						135					140				
Leu	Arg	Leu	Leu	Arg	Leu	Ser	Arg	Leu	Ile	Arg	Tyr	Ile	His	Gln	Trp	
145					150					155					160	
Glu	Glu	Ile	Phe	His	Met	Thr	Tyr	Asp	Leu	Ala	Ser	Ala	Val	Val	Arg	
				165					170					175		
Ile	Phe	Asn	Leu	Ile	Gly	Met	Met	Leu	Leu	Leu	Cys	His	Trp	Asp	Phe	
			180					185					190			
Cys	Leu	Gln	Phe	Leu	Val	Pro	Leu	Leu	Gln	Asp	Phe	Pro	Pro	Asp	Cys	
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Trp	Val	Ser	Leu	Asn	Glu	Met	Val	Asn	Asp	Ser	Trp	Gly	Lys	Gln	Tyr	
	210					215					220					
Ser	Tyr	Ala	Leu	Phe	Lys	Ala	Met	Ser	His	Met	Leu	Cys	Ile	Gly	Tyr	
225					230					235					240	
Gly	Ala	Gln	Ala	Pro	Val	Ser	Met	Ser	Asp	Leu	Trp	Ile	Thr	Met	Leu	
				245					250					255		
Ser	Met	Ile	Val	Gly	Ala	Thr	Cys	Tyr	Ala	Met	Phe	Val	Gly	His	Ala	
			260					265					270			
Thr	Ala	Leu	Ile	Gln	Ser	Leu	Asp	Ser	Ser	Arg	Arg	Gln	Tyr	Gln	Glu	
		275					280					285				
Lys	Tyr	Lys	Gln	Val	Glu	Gln	Tyr	Met	Ser	Phe	His	Lys	Leu	Pro	Ala	
	290					295					300					
Asp	Met	Arg	Gln	Lys	Ile	His	Asp	Tyr	Tyr	Glu	His	Arg	Tyr	Gln	Gly	
305					310					315					320	
Lys	Ile	Phe	Asp	Glu	Glu	Asn	Ile	Leu	Asn	Glu	Leu	Asn	Asp	Pro	Leu	
				325					330					335		
Arg	Glu	Glu	Ile	Val	Asn	Phe	Asn	Cys	Arg	Lys	Leu	Val	Ala	Thr	Met	
			340					345					350			
Pro	Leu	Phe	Ala	Asn	Ala	Asp	Pro	Asn	Phe	Val	Thr	Ala	Met	Leu	Ser	
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Lys	Leu	Arg	Phe	Glu	Val	Phe	Gln	Pro	Gly	Asp	Tyr	Ile	Ile	Arg	Glu	
	370					375					380					
Gly	Ala	Val	Gly	Lys	Lys	Met	Tyr	Phe	Ile	Glx	His	Gly	Val	Ala	Gly	
385					390					395					400	
Val	Ile	Thr	Lys	Ser	Ser	Lys	Glu	Met	Lys	Leu	Thr	Asp	Gly	Ser	Tyr	
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Phe	Gly	Glu	Ile	Cys	Leu	Leu	Thr	Lys	Gly	Arg	Arg	Thr	Ala	Ser	Val	
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Arg	Ala	Asp	Thr	Tyr	Cys	Arg	Leu	Tyr	Ser	Leu	Ser	Val	Asp	Asn	Phe	
		435					440					445				

Asn	Glu	Val	Leu	Glu	Glu	Tyr	Pro	Met	Met	Arg	Arg	Ala	Phe	Glu	Thr
450						455									
Val	Ala	Ile	Asp	Arg	Leu	Asp	Arg	Ile	Gly	Lys	Lys	Asn	Ser	Ile	Leu
465					470					475					480
Leu	Gln	Lys	Phe	Gln	Lys	Asp	Leu	Asn	Thr	Gly	Val	Phe	Asn	Asn	Gln
				485					490					495	
Glu	Asn	Glu	Ile	Leu	Lys	Gln	Ile	Val	Lys	His	Asp	Arg	Glu	Met	Val
			500					505					510		
Gln	Ala	Ile	Ala	Pro	Ile	Asn	Tyr	Pro	Gln	Met	Thr	Thr	Leu	Asn	Ser
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Thr	Ser	Ser	Thr	Thr	Thr	Pro	Thr	Ser	Arg	Met	Arg	Thr	Gln	Ser	Pro
	530					535					540				
Pro	Val	Tyr	Thr	Ala	Thr	Ser	Leu	Ser	His	Ser	Asn	Leu	His	Ser	Pro
545					550					555					560
Ser	Pro	Ser	Thr	Gln	Thr	Pro	Gln	Pro	Ser	Ala	Ile	Leu	Ser	Pro	Cys
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Ser	Tyr	Thr	Thr	Ala	Val	Cys	Ser	Pro	Pro	Val	Gln	Ser	Pro	Leu	Ala
			580					585					590		
Ala	Arg	Thr	Phe	His	Tyr	Ala	Ser	Pro	Thr	Ala	Ser	Gln	Leu	Ser	Leu
		595					600					605			
Met	Gln	Gln	Gln	Pro	Gln	Gln	Gln	Val	Gln	Gln	Ser	Gln	Pro	Pro	Gln
	610					615					620				
Arg	Gln	Pro	Gln	Gln	Pro	Ser	Pro	Gln	Pro	Gln	Thr	Pro	Gly	Ser	Ser
625					630					635					640
Thr	Pro	Lys	Asn	Glu	Val	His	Lys	Ser	Thr	Gln	Ala	Leu	His	Asn	Thr
				645					650					655	
Asn	Leu	Thr	Arg	Glu	Val	Arg	Pro	Phe	Ser	Ala	Trp	Gln	Pro	Ser	Leu
			660					665					670		
Pro	His	Glu	Val	Ser	Thr	Leu	Ile	Ser	Arg	Pro	His	Pro	Thr	Val	Gly
		675					680					685			
Glu	Ser	Leu	Ala	Ser	Ile	Pro	Gln	Pro	Val	Thr	Ala	Val	Pro	Gly	Thr
	690					695					700				
Gly	Leu	Gln	Ala	Gly	Gly	Arg	Ser	Thr	Val	Pro	Gln	Arg	Val	Thr	Phe
705					710					715					720
Phe	Arg	Gln	Met	Ser	Ser	Gly	Ala	Ile	Pro	Pro	Asn	Arg	Gly	Val	Leu
				725					730					735	
Pro	Ala	Pro	Leu	Pro	Leu	Ile	Thr	Pro	His	Pro	Lys	Lys			
			740					745							